

  
**MINNESOTA BEVERAGE**  
ASSOCIATION

Representing the bottlers & distributors of non-alcoholic beverages

January 21, 2014

Mr. Wayne Gjerde  
Minnesota Pollution Control Agency  
520 Lafayette Road N  
St. Paul, MN 55155-4194

Dear Mr. Gjerde:

Attached please find the written comments from the Minnesota Beverage Association regarding the MPCA's draft cost-benefit analysis. Some of our top concerns include:

- The report misrepresents the \$29 million deficit created by the proposal as the cost of the proposed scheme. The actual cost of the deposit system would be \$219 million per year (\$179 million in operating costs documented in the report plus \$40 million in travel costs for consumers to drive to redemption centers but not quantified in the report). The bulk of the cost of this system would fall on Minnesota consumers. This compares unfavorably to the \$74 million that it currently takes to run the entire residential recycling system.
- While we believe the incremental recycling benefits projected are overstated, even using the optimistic figures in the report, the deposit/refund system would increase Minnesota's recycling rate by less than two percentage points – from 46 percent to 48 percent.
- By reducing the number of redemption centers by two-thirds from the original MPCA proposal, the cost-benefit analysis greatly reduced the cost of the proposal, but in doing so shifted the costs onto the consumer in the form of longer trips to the redemption center. The report assumes just 47 redemption centers for rural Minnesota – less than one per county. This problem is magnified by assumptions that limit the number of containers consumers can redeem in each trip, leading to more trips.
- The proposal creates a new tax on beverage distributors which will get passed through to consumers in the long term. A new non-elected entity with taxing authority is also created.
- The impact of fraud is significantly underestimated since Minnesota has nearly double the share of population living in border counties compared to California and the higher 10¢ deposit provides for an increased incentive to commit fraud.

Sincerely,



Tim Wilkin  
President

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# Comments on Recycling Refund System Cost Benefit Analysis<sup>1</sup>

The Minnesota Pollution Control Agency (MPCA) has developed a unique and unprecedented scheme for a beverage container deposit/refund system for Minnesota and released a draft report projecting the impacts of that system on January 9, 2014. This document reflects comments made at MPCA's January 14 public meeting as well as additional detailed questions and alternative analysis.

The consultants had a difficult task to simulate the impact of an untested deposit/refund system. We find that the way in which the results are presented minimizes and mis-states the actual cost of the system, especially the burden on consumers. Our primary analytical concerns are (1) omitting the critical consumer travel/redemption cost (referenced in the draft, but not quantified) and (2) overstating the incremental recycling impact of the proposed scheme. We have expanded on these concerns below and addressed a number of additional issues.

## ***1. The proposed scheme would cost \$219 million per year – not the \$29 million cited in the report's Executive Summary.***

- The report documents **\$179 million** in annual costs to operate the scheme devised by MPCA (p.23), principally to fund more than 400 newly-established redemption centers.
- The report excludes “undetermined costs incurred by consumers in transporting beverage containers to redemption sites.” We estimate that cost conservatively at **\$40 million** per year.<sup>2</sup> **The consumer costs should be included in the analysis.** While not a convenient truth for deposit advocates, consumer research in multiple states indicates that incremental travel/special trips for redemption are common, even in a state like Iowa where virtually all redemption occurs at retail stores.
- The combined **\$219 million** cost reflects the development and operation of a completely new system to handle recycled beverage containers – despite the fact that the existing recycling system could handle these containers today.
- This is a system cost and does not consider the incidence of costs across different stakeholder groups, although as noted below, consumers would bear most of the cost.

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<sup>1</sup> Based on January 2014 draft by Reclay StewardEdge for MPCA; comments prepared by Northbridge Environmental for the Minnesota Beverage Association.

<sup>2</sup> Research on consumer redemption costs has been conducted in California, Iowa, Massachusetts, Rhode Island, and Vermont with Vermont being the most recent and applicable given a nearly identical population density and a similar heavy reliance on redemption centers as opposed to retail redemption. Vermont's consumer costs are just under \$200 per ton (“Systems Analysis of the Impact of Act 148 on Solid Waste Management in Vermont,” Vermont Agency of Natural Resources, October 21, 2013, Table 46). \$40 million is the product of \$200 per ton and 200,000 tons modeled as being returned for redemption. Because the Minnesota scheme would provide for many fewer redemption opportunities than Vermont on a per capita basis, travel distances and costs would likely be higher in Minnesota, so this is a conservatively low estimate.

- Characterizing the operating cost of the system as \$29 million is misleading at best. The \$29 million figure is simply the amount of outside subsidy required to operate the system after all other revenue sources are exhausted; the report asserts that covering this shortfall would be the responsibility of beverage distributors as the operators of the proposed system.

## ***2. The scheme would cost Minnesota consumers \$178 million per year.***

Consumers would directly or indirectly fund most of the cost of this new system through forfeited deposits on containers they do not redeem and through the cost to travel to designated redemption locations to collect refunds.

- According to the study, consumers would **forfeit \$109 million in deposits** each year: \$74 million worth of dimes would not be redeemed at all and \$35 million are assumed to be redeemed by MRFs or others, but all \$109 million would come from Minnesota consumers.<sup>3</sup>
- Many consumers that do redeem containers would make special trips to do so or would travel out of their way to redemption centers. **\$40 million in travel costs** (see footnote 2) is a conservative estimate given that Vermont (on which the estimate is based) has many more redemption opportunities per capita than Minnesota would have.
- Finally, consumers would ultimately fund the **\$29 million shortfall** required to operate the system, since producers would likely incorporate those costs into prices over the long term.

## ***3. The proposed scheme would nearly triple the cost of recycling in Minnesota, but increase the recycling rate by less than two percent.***

- The net cost of the system after scrap revenue is deducted would be \$143 million.<sup>4</sup> That compares to a cost of the current residential recycling system of between \$61 million and \$74 million.<sup>5</sup> So adding a deposit system would triple the state's recycling spending.
- The incremental recycling projected from deposits is 107,000 tons (likely overstated as noted below), but that is only 1.9 percent of MSW, so to use deposits to move the state's recycling rate from 46 percent to 48 percent would take three times the spending.

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<sup>3</sup> Unclaimed deposits are not an indication of laziness or disinterest by consumers, but more a reflection of the burden associated with redemption. Consumers that forfeit deposits are making a rational economic choice that claiming the refund is not worth the time, space, travel cost, and other aggravations – especially when the containers can be simply recycled at home for virtually no effort. The existence of the deposit mandate coerces the consumer into paying the deposit (which for them is effectively a tax).

<sup>4</sup> \$219 million gross system cost minus \$76 million in scrap revenue.

<sup>5</sup> "Extended Producer Responsibility Cost-Benefit Study – Working Paper 2," Recycling Reinvented, January 11, 2014, <http://marketbasedrecycling.com/marketbasedrecycling/wp-content/uploads/2014/01/RR-EPR-MN-Study-Working-Paper-2.pdf>

#### ***4. The draft understates baseline recycling and therefore overstates incremental recycling from the deposit scheme by between 42% and 75%.***

By overstating the incremental effect of deposits, the study inflates the benefits attributed to the proposed system.

- Current beverage container recycling is underestimated based on our analysis of MPCA’s Statewide Waste Characterization report released in October; we were unable to reconcile discrepancies between the draft and the waste composition data. Detailed calculations and comparisons are shown in Attachment A.
- For aluminum, the beverage can recycling rate in Minnesota should be 62% according to sales data used in the draft report and the waste composition study results. The draft report, however, shows only a 53% rate.<sup>6</sup>
- For glass, the waste composition report data indicate that the beverage container recycling rate should be between 66% and 75% rather than the 47% in the draft.<sup>7</sup> The range for glass results from an “exception to the methodology” made in the draft report. This special assumption makes the deposit proposal appear more effective.
- The net effect of these discrepancies is that the draft overstates the recycling impact of the proposal by between 42% and 75%. As noted earlier, even at the overstated figure in the draft, the impact on the state’s recycling rate would be less than two percentage points.

#### ***5. The report soft pedals the impact of fraud.***

- Fraud is a pervasive problem with deposit/refund systems and the magnitude of the 10¢ deposit provides a powerful incentive for fraud within the redemption system and from across Minnesota’s long border. Every fraudulent redemption increases the program’s deficit and adds more to the bill consumers must pay for this scheme.
- In the draft, fraudulent redemption is counted in the benefits attributed to the deposit scheme. We do not believe this is appropriate, especially if the containers in question were already destined for recycling in another state.
- We also believe the report understates the magnitude of fraud. For example, the total recycling rate for aluminum cans is projected to be 90% (Table 6), but the recycling rate in California was 94% in 2012 with only a 5¢ deposit (10¢ on 24 oz and larger). Having twice as high a deposit would induce significantly more fraud than experienced in California, driving up the apparent redemption rate. An individual defrauding the

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<sup>6</sup> Table 3 implies disposal of 15,101 tons of aluminum cans in contrast to 12,200 tons in the waste composition study Table 5-1 – see Attachment A for detail.

<sup>7</sup> Table 3 implies disposal of 82,020 tons of glass beverage containers in contrast to 53,000 tons from the waste composition study at the 90% percentile level of 1.8% of total disposal (Table ES-1). The draft implies that disposed glass beverage containers account for 2.81% of all MSW disposed. See Attachment A for detail.

California system stands to earn the 3¢ difference between a 5¢ “refund” and the roughly 2¢ per pound available for aluminum scrap. In Minnesota the incentive would be 8¢.

- In addition to the stronger economic incentive, Minnesota has nearly double the share of its population living in counties bordering other states compared to California. So the demographics also argue for fraud being an even greater issue in Minnesota.
- Finally, the report should explicitly address the problem of scavenging, even though quantifying the impact would be difficult. Scavengers already despoil parks and neighborhoods rummaging through recycling and trash bins for containers where refunds are only 5¢. The 10¢ deposit would compound the scavenging problem and likely divert to redemption some of the materials and funds modeled as going to MRFs.

## ***6. Costs to operate the redemption system reflect an optimistic “best case.”***

The analysis reduced the number of redemption centers modeled by two-thirds compared to the original MPCA proposal as a way of reducing the cost of the system. This change makes the cost of the system appear artificially low because it shifts more of the cost burden to consumers to travel longer distances to redeem, yet those costs are excluded from the draft analysis. The net effect is that the report masks the full costs of the system.

- The projected operating costs of the redemption system are substantial (\$141 million to centers alone), but assuming the creation of a relatively small number of very large redemption centers keeps that cost comparatively low.<sup>8</sup> The explicit reason for reducing the number of centers was to minimize operating costs, but there is a critical, hidden trade-off of convenience and travel time/costs for consumers.
- The consumer burden of redeeming containers (quantified conservatively at \$40 million per year) would be greater than in other deposit jurisdictions. While the draft notes that California and Hawaii have comparable numbers of residents per redemption site (12,000 to 15,000), the population *densities* of those states are four to five times higher than Minnesota’s. That means that Minnesota consumers would face much greater distances to reach the typical redemption site.
- The burden on rural consumers seems particularly severe. The analysis identifies only 47 redemption centers in “rural” areas. It is hard to imagine how the state’s rural population can be served by so few sites without requiring very long driving distances.
- Our use of Vermont as a proxy for consumer cost is very conservative given that the Green Mountain state has roughly one certified redemption center for every 6,000 residents (twice as many as modeled for Minnesota) as well as hundreds of retail locations where containers can be redeemed.

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<sup>8</sup> The magnitude of costs appears reasonable given the scale of these operations; if assumptions were changed to increase the number of redemption centers and the convenience for consumers, then costs per unit redeemed would rise.

- It is worth emphasizing that the approximately 4¢ per container redemption center cost is achieved largely because of the assumption that the redemption centers would have very high throughput of 6 to 10 million containers per year. The average certified center in Vermont handles about 1.7 million. More numerous, smaller centers would mean higher costs.

## ***7. Costs to existing recyclers are understated.***

Separating deposit containers at MRFs would be more costly and more difficult than assumed in the analysis, driving up costs.

- The draft assumes MRFs would virtually break even, losing more than \$15 million in commodity value but receiving nearly \$15 million in “refunds” for deposit containers they pluck out of their recycling facilities.
- We believe that the effort of separating those containers would impose a significant cost on facility operators, leading to either a net loss to these facilities or a lower share of the material being removed for “refunds.” In either case, the impact on existing recyclers would be greater than estimated.
  - The analysis does not include any cost associated with the largely manual recovery of 150 million bottles, cans, and cartons. Since facilities would have to make facility and staffing changes to accommodate the required sorting, they would incur at least some premium above normal operating costs to handle these containers, separate them, secure them, and transport them.
  - It is likely that these costs and physical limitations would render some MRFs incapable of separating the containers, so the “redemption” of 150 million units from these facilities may be overly optimistic.
- As noted earlier, scavenging would be a particular problem for containers left out for municipal recycling collection. Experience in other deposit jurisdictions indicates extensive scavenging of recycling carts, creating messes for residents and short-changing MRFs on the material they expect to receive, a problem that would be exacerbated by the higher 10¢ deposit
- Accepting MRF-sourced containers for refund may pose an audit challenge for redemption centers and the system administrators. Given the condition of these containers, it may be very difficult to distinguish these containers from material that had previously been redeemed or recycled. Accepting flattened, crushed, or de-labeled containers for redemption opens up enormous potential for fraud and is not allowed in many deposit jurisdictions.

## ***8. Other benefits attributed to the proposed system are also overstated for a variety of reasons.***

- **Residential disposal savings are overestimated** to the extent that incremental recycling is overestimated (see earlier point). Given our calculations, instead of \$4.4 million the disposal cost savings would range between \$2.5 million and \$3.1 million. This needs to be compared against the \$178 million cost to consumers (since consumers and local taxpayers/ratepayers are one and the same). The draft concludes that residential collection costs for recycling and trash are effectively unchanged, which is reasonable.
- **Estimated job impacts come at an extremely high cost.** The system cost of this scheme would be \$219 million. That cost is equivalent to \$206,000 for each of the 1,065 jobs created – jobs that would mostly pay minimum wage and likely not provide any benefits. It is likely that far more cost-effective job creation programs are available to the government and citizens of Minnesota.
- **Litter study data used to show benefits are irrelevant.** Using data from litter studies from the 1970s and 1980s to estimate litter reduction is not appropriate. Just as dated sales data were deemed inappropriate for quantifying sales impacts, the same is true for litter.
  - Beverage markets, consumer attitudes, litter control programs, the real value of the deposit, and social norms are radically different now than they were then and many of these studies were conducted using less than rigorous analytical approaches.
  - Statistically valid comparisons between states do not indicate that deposits necessarily lead to less litter. The 2010 litter survey across northern New England states found that adjusting for differences like population and traffic, New Hampshire (no deposits) had less litter than Maine (the most comprehensive deposit program in the US) or Vermont (deposits on beer, carbonated soft drinks, and liquor).<sup>9</sup> And Vermont actually had more beverage container litter than New Hampshire.

## ***9. Additional Comments***

- The incremental recycling estimates used in Chapter 4 (93,000 tons) are not consistent with those in Chapter 3 (107,000 tons).
- The types and share of containers that could not be handled through reverse vending machines are too limited. Other examples: the family-size fruit beverage category ( $\geq 32$  oz) is dominated by PET bottles with non-cylindrical shapes, handles molded into the bodies, and other complications for traditional bar-code reading in a RVM; small (5.5 oz or 6 oz) and large (46 oz) metal cans; many single serve juices in PET and HDPE are

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<sup>9</sup> “Northeast 2010 Litter Survey,” Environmental Resources Planning, LLC for the American Beverage Association.

non-cylindrical; and large format (1.75 liter) liquor bottles. In any event, however, we agree there would be a very limited role for reverse vending machines in the proposed system.

- Scrap prices are overstated given the years selected for the average. More importantly, the implied PET premium (which appears to be about 10¢ per pound) is extremely high and well above what we typically see in the northeast. A premium of 3¢ for deposit material is much more typical.
- The report indicates that fraud can be reduced by “...limiting the number of containers that individuals can return to redemption sites...” This is yet another program design component that would shift costs onto consumers as they are forced to make additional trips due to these limits. The burden of these limits would especially be felt in rural Minnesota, which would be served by fewer redemption centers.

## *Summary*

Developing the performance, cost, and benefit parameters around an unprecedented deposit scheme is a challenging exercise. It is important that the report emphasize the impact on key stakeholders, especially those like Minnesota consumers who are not represented in these policy discussions. Consumers clearly bear the brunt of this proposal in terms of financial and time/convenience impacts.

Using data consistent with the waste composition analysis, the incremental impact of the proposed scheme would be minimal, especially if incremental recycling tonnages were limited to Minnesota material and did not also include fraudulent redemptions from other jurisdictions.

Putting the cost and impact of the proposal into perspective, the net cost of MPCA’s model redemption system (after scrap) would be \$143 million – about twice the estimated cost of the entire residential recycling system in Minnesota today. For that massive expenditure, using the study’s optimistic figures, the state’s recycling rate would rise by less than two percentage points – from 46 percent to 48 percent. This is clearly a poor investment.

Fraud would likely be the fiscal undoing of this proposed system given the 10¢ per container incentive, the border population, and the extent of scavenging that would occur. Ultimately the system would likely refund more deposits than it collected unless massive resources were devoted to intercepting fraud.

The assumptions about operating relatively few, large redemption centers artificially drive down the cost of the system, especially where consumer costs are left unquantified in the analysis. Especially in rural Minnesota, consumers would spend a lot of time in their cars driving around their bottles, cans, and cartons.

Ultimately, there are far more cost effective ways to increase recycling of not just beverage containers, but other materials as well – especially those high volume paper and plastic products called out in the waste composition study as top priorities. These more effective approaches build on the existing infrastructure instead of detracting from it and optimize consumer

convenience and minimize consumer costs. Using the inflated estimate of incremental recycling from the proposed system, the net cost (net of scrap) to recycle a new ton of material through this program would be more than \$1,300 per ton; using estimates consistent with the waste composition study, the costs would approach or exceed \$2,000 per ton. It is possible to do much more with much less.

We appreciate the opportunity to comment on the draft report. For questions or further information contact Tim Wilkin ([tim@mnbev.com](mailto:tim@mnbev.com)) or Kevin Dietly ([kdietly@nbenvironmental.com](mailto:kdietly@nbenvironmental.com)).

# **Attachment A:**

## **Reconciling Current and Incremental Recycling Estimates**

Our review of the current recycling data in the report and the description of the methodology indicates inconsistencies with the data in the waste composition report. We have detailed our calculations and questions below in hope of understanding where the discrepancies are.

Given the unreliability of the beverage-specific recycling data available to the consultant, the approach described in the report was to take consumption/generation data derived from the Container Recycling Institute's model and subtract disposed quantities to back into the recycling quantities.<sup>10</sup> We focused our review on aluminum, glass, and PET and found the reports were consistent with regard to PET, but not with aluminum and glass. The draft describes making an exception to the methodology for glass, but even accounting for that exception (the validity of which is somewhat suspect) we could not reconcile the data.

### **Baseline Recycling**

The draft computes a recycling rate of 45 percent for beverage containers (draft Table 3) and the components of the calculation are shown in Table A-1 below, columns A through C.

Turning to the waste composition study, the tons of beverage container material disposed for PET, aluminum, and glass were taken directly from Table 5-1 (see Table A-1, column D; we assumed disposal of other materials was equal to what was in the draft report).

- PET disposal is identical between the two reports.
- Aluminum disposal is 15,101 in the draft and 12,200 in the waste composition study for a different of 2,901 tons. Using the waste composition study figure results in an aluminum can recycling rate for Minnesota of 62 percent, not 53 percent as shown in the draft.

Glass is more complicated because the draft describes a deviation from the methodology because the glass recycling rate was "higher than could reasonably be expected." We would argue that this is not the first waste composition study in recent years that has found surprisingly high collection of glass and RSE should not be so quick to discount the validity of the data. The fact that much of that glass does not enter conventional recycling markets because of its low value and high transportation cost means that much of it is used locally for beneficial uses, avoiding disposal costs and avoiding use of alternative material such as gravel or other fill. In prior research we have consistently found lower reported glass recycling (such as in the EPA national data) than is actually collected and diverted from disposal.

To address their concerns, RSE elected to use the 90 percent confidence level for the share of glass in MSW disposal, thereby driving down the estimated baseline recycling. The reason

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<sup>10</sup> As noted, the beverage industry performed a limited survey of Minnesota beverage markets in 2009. While there are areas of disagreement between the CRI estimates, which are effectively population-adjusted figures from national data, and the Minnesota-specific data we collected, those differences are dwarfed by the impact of the discrepancy on disposal quantities.

presented for this exception, that waste composition results are ‘based on a statistical analysis based on a limited number of field samples,’ is not unique to glass. The same could be said of all of the materials in the study. Why glass alone was selected for an exception is not explained.

Even using the alternative assumption, however, we are unable to reconcile the draft report with the waste composition study. We used the waste composition study (Table 5-1 for the mean and Table 4-5 for the 90 percent confidence interval) and computed glass beverage container disposal as shown in Table A-1 columns D and F. Even at the 90 percent figure, we compute glass beverage container disposal at 53,000 tons, not 82,020 as shown in the draft – a difference of 29,020 tons. Using the mean (consistent with the other materials in the analysis), disposal is 38,900 tons, a difference of 43,120 tons. Using these values, the glass beverage container recycling rate is between 66 percent and 75 percent, compared with 47 percent in the draft.

Between glass and aluminum, we calculate a difference of 32,000 to 46,000 tons in the amount disposed/recycled. Those differences would move the baseline beverage container recycling rate from 45 percent shown in the draft to between 58 percent and 64 percent.

If the waste composition study is deemed to be valid and is, indeed, the best available resource for computing recycling rates for beverage containers, the study should show a baseline recycling rate of 64 percent.

### **Incremental Recycling**

The draft suggests that beverage container recycling would increase by 107,000 tons (see Table A-2 below) with a deposit system (the difference between recycling in Table 7 and Table 3).<sup>11</sup> Using our analysis from Table A-1, we calculated two alternative recycling totals using glass at the mean level measured in the waste composition analysis and at the upper limit of the 90 percent confidence interval.

At the mean, baseline recycling would be 160,000 tons so the incremental impact of the deposit system would be an additional 61,000 tons. The report’s estimate of 107,000 tons is 75 percent higher than this – a dramatic overstating of the impact of the system.

If RSE’s justification for using the upper bound of the confidence interval is valid, then baseline recycling would be 146,000 tons and the modeled deposit system would increase recycling by 75,000 tons. Even in this instance, the draft overstates the effect of deposits by 42 percent.

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<sup>11</sup> As noted earlier in the comments, the report has a second set of incremental recycling figures used in Chapter 4 and summarized in Table 13; we are unclear why these figures are different from those described here.

Table A-1

## Report Understates Current Recycling/Overstates Incremental Effect of Deposits - Reconciling Baseline Recycling with the 2012 Waste Composition Study

<i>Draft Report Table 3</i>				<i>Glass and Aluminum Disposal per Waste Comp Study</i>				<i>Revised Recycling Tonnage and Rates</i>				
<b>Material</b>	<b>Generation</b>	<b>Recycling</b>	<b>Disposal</b>	<b>Disposal: Glass at Mean</b>	<b>Discrepancy at Mean</b>	<b>Disposal: Glass at 90th %ile</b>	<b>Discrepancy at 90th %ile</b>	<b>Recycling: Glass at Mean</b>	<b>Recycling: Glass at 90th %ile</b>	<b>Rates: Report</b>	<b>Rates: Glass at Mean</b>	<b>Rates: Glass at 90th %ile</b>
PET	41,732	18,532	23,200	23,200	-	23,200	-	18,532	18,532	44%	44%	44%
Aluminum	32,087	16,986	15,101	12,200	2,901	12,200	2,901	19,887	19,887	53%	62%	62%
Glass	155,072	73,052	82,020	38,900	43,120	53,000	29,020	116,172	102,072	47%	75%	66%
All Other	22,199	5,652	16,547	16,547	-	16,547	-	5,652	5,652	25%	25%	25%
<b>Totals</b>	<b>251,090</b>	<b>114,222</b>	<b>136,868</b>	<b>90,847</b>	<b>46,021</b>	<b>104,947</b>	<b>31,921</b>	<b>160,243</b>	<b>146,143</b>	<b>45%</b>	<b>64%</b>	<b>58%</b>
<i>Column</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>K</i>	<i>L</i>
<i>Source</i>	<i>Table 3</i>	<i>Table 3</i>	<i>Col A - Col B</i>	<i>Table 5-1; glass beverage containers at 1.3% of disposal</i>	<i>Col C - Col D</i>	<i>Table 4-5; glass beverage containers at 1.8% of disposal</i>	<i>Col C - Col F</i>	<i>Col A - Col D</i>	<i>Col A - Col F</i>	<i>Col B / Col A</i>	<i>Col H / Col A</i>	<i>Col I / Col A</i>

Table A-2

## Report Overstates Incremental Effect of Deposits by 42% to 75%

<i>Draft Report Tables 3 and 7</i>				<i>Glass and Aluminum Disposal per Waste Comp Study</i>					
<b>Material</b>	<b>Baseline Recycling</b>	<b>Projected Recycling</b>	<b>Increase</b>	<b>Baseline Recycling: Glass at Mean</b>	<b>Deposit Increase: Glass At Mean</b>	<b>Difference from Draft</b>	<b>Baseline Recycling: Glass at 90th %ile</b>	<b>Deposit Increase: Glass at 90th %ile</b>	<b>Difference from Draft</b>
PET	18,532	34,604	16,072	18,532	16,072	0%	18,532	16,072	0%
Aluminum	16,986	29,348	12,362	19,887	9,461	31%	19,887	9,461	31%
Glass	73,052	141,582	68,530	116,172	25,410	170%	102,072	39,510	73%
All Other	5,652	16,084	10,432	5,652	10,432	0%	5,652	10,432	0%
<b>Totals</b>	<b>114,222</b>	<b>221,618</b>	<b>107,396</b>	<b>160,243</b>	<b>61,375</b>	<b>75%</b>	<b>146,143</b>	<b>75,475</b>	<b>42%</b>
<i>Column</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>
<i>Source</i>	<i>Table 3</i>	<i>Table 7</i>	<i>Col A - Col B</i>	<i>Table 1 Col H</i>	<i>Col B - Col D</i>	<i>(Col C - Col E) / Col E</i>	<i>Table 1 Col I</i>	<i>Col B - Col F</i>	<i>(Col C - Col H) / Col H</i>